

Listing of claims:

1. (Currently Amended) A system for measuring temperatures of a device, comprising:
a dual diode system, comprising a first junction diode and a second junction diode wherein the first junction diode and the second junction diode are collocated on a first substrate, the dual diode system having a first terminal that is coupled to a first electrode of the first junction diode, wherein the first electrode of the first junction diode has a first polarity, a second terminal that is coupled to a first electrode of the second junction diode, wherein the first electrode of the second junction diode has the first polarity, and a third terminal that is coupled to second electrodes of the first and second junction diodes, wherein the second electrodes of the first and second junction diodes have a second polarity that is opposite of the first polarity;
a temperature measurement circuit that is formed on a second substrate and that is configured to perform a voltage measurement by measuring two voltages that result after applying two different currents to a single junction diode through a single terminal; wherein the single junction diode is one of the first junction diode or the second junction diode, and the single terminal is one of the first terminal or the second terminal using only one of the first and second terminals; and
a bias circuit that is configured to bias the third terminal.

2. (Currently Amended) A system for measuring temperatures of a device, comprising:
a dual diode system, comprising a first junction diode of a first transistor and a second junction diode of a second transistor; wherein the first transistor and the second transistor are collocated on a first substrate, the first transistor and the second transistor are of a same transistor type, the dual diode system having a first terminal coupled to an emitter of the first transistor, a second terminal coupled to an emitter of the second transistor, and a third terminal coupled in common with a base of the first transistor and a base of the second transistor;
a temperature measurement circuit that is formed on a second substrate and that is configured to perform a ~~voltage measurement~~ first voltage measurement at a single terminal after applying a first current to a single junction diode through the single terminal and to perform a second voltage measurement at the single terminal after applying a second current to the single

junction diode through the single terminal; wherein the single junction diode is one of the first junction diode or the second junction diode, and the single terminal is one of the first terminal or the second terminal using only one of the first and second terminals; and
a bias circuit that is configured to bias the third terminal.

3. (Original) The system of claim 1, wherein the first electrode of the first junction diode comprises a cathode, the first electrode of the second junction diode comprises a cathode, and the second electrodes of the first and second junction diodes each comprise an anode.

4. (Original) The system of claim 1, wherein the bias circuit is formed on the first substrate.

5. (Original) The system of claim 1, wherein the bias circuit is formed on one of the second substrate, a third substrate, and a discrete component.

6. (Original) The system of claim 1, wherein the temperature measurement circuit is configured to perform a voltage measurement using the third terminal.

7. (Previously Presented) The system of claim 1, wherein the temperature measurement circuit is configured to perform a voltage measurement by using only the first terminal in response to two currents applied to the first terminal at different times, and wherein the temperature measurement circuit determines the junction temperature of the first diode.

8. (Currently Amended) A method for measuring the temperature of a device, comprising:
collocating a dual diode system on a first substrate wherein the dual diode system comprises a first terminal that is coupled to a first electrode of a first junction diode, wherein the first electrode of the first junction diode has a first polarity, a second terminal that is coupled to a first electrode of a second junction diode, wherein the first electrode of the second junction diode has the first polarity, and a third terminal that is coupled to second electrodes of the first and

second junction diodes, wherein the second electrodes of the first and second junction diodes have a second polarity that is opposite of the first polarity;

forming a temperature measurement circuit on a second substrate;

performing a voltage measurement by measuring two voltages at a single terminal after applying two different currents to the single terminal such that the two different currents are applied to a single junction diode; wherein the single junction diode is one of the first junction diode or the second junction diode, and the single terminal is one of the first terminal or the second terminal ~~using only one of the first and second terminals~~, wherein the voltage measurement is performed using the temperature measurement circuit; and

biasing the third terminal.

9. (Original) The method of claim 8, wherein the first electrode of the first junction diode comprises an emitter, the first electrode of the second junction diode comprises an emitter, and the second electrodes of the first and second junction diodes each comprise a base.

10. (Original) The method of claim 8, wherein the first electrode of the first junction diode comprises a cathode, the first electrode of the second junction diode comprises a cathode, and the second electrodes of the first and second junctions diode each comprise an anode.

11. (Original) The method of claim 8, wherein the biasing the third terminal is performed using a bias circuit that is formed on the first substrate.

12. (Original) The method of claim 8, wherein the bias circuit is formed on one of the second substrate, a third substrate, and a discrete component.

13. (Previously Presented) The method of claim 8, wherein the couplings are connections.

14. (Original) The method of claim 8, wherein the temperature measurement circuit comprises a differential analog-to-digital converter.

15. (Currently Amended) A system for measuring the temperature of a device, comprising:
a dual diode system comprising a first junction diode means and a second junction diode means wherein the first junction diode means and the second junction diode means are collocated on a first substrate wherein the dual diode system comprises a first terminal that is coupled to a first electrode of the first junction diode means, wherein the first electrode of the first junction diode means has a first polarity, a second terminal that is coupled to a first electrode of the second junction diode means, wherein the first electrode of the second junction diode means has the first polarity, and a third terminal that is coupled to second electrodes of the first and second junction diode means, wherein the second electrodes of the first and second junction diode means have a second polarity that is opposite of the first polarity;
forming a means for measuring a signal on a second substrate;
means for performing a voltage measurement at a single terminal after applying two different currents to the single terminal such that the two different currents are applied to a single junction diode means; wherein the single junction diode means is one of the first junction diode means or the second junction diode means and the single terminal is one of the first terminal or the second terminal using only one of the first and second terminals, wherein the voltage measurement is performed using the signal measuring means; and
means for biasing the third terminal.

16. (Previously Presented) The system of claim 15, wherein the first electrode of the first junction diode means comprises an emitter, the first electrode of the second junction diode means comprises an emitter, and the second electrodes of the first and second junction diode means each comprise a base.

17. (Previously Presented) The system of claim 15, wherein the first electrode of the first junction diode means comprises a cathode, the first electrode of the second junction diode means comprises a cathode, and the second electrodes of the first and second junctions diode means each comprise an anode.

18. (Previously Presented) The system of claim 15, wherein the means for biasing the third terminal comprises a bias circuit that is formed on the first substrate.

19. (Previously Presented) The system of claim 15, wherein the bias circuit is formed on one of the second substrate, a third substrate, and a discrete component.

20. (Previously Presented) The system of claim 15, wherein the signal measuring means is configured to perform a voltage measurement using different currents on the same junction diode means.